POWER'S CAMERAGRAPH

POWER'S CAMERAGRAPH

THIS SUPERSEDES ALL
PREVIOUS CATALOGS

NICHOLAS POWER COMPANY
90 GOLD STREET, NEW YORK

Notice

Power's Cameragraphs are sold under the following license restriction, which appears on the nameplate of each machine:

"This machine is sold by Nicholas Power Company with the restriction that it may be used only as originally sold or with substitute or repair parts made by Nicholas Power Company."

Anyone using any part or parts for repairing or rebuilding the Power's No. 6 or 6A machines other than parts manufactured by us, will be an infringer of our patents and will be treated as such.

NICHOLAS POWER COMPANY

Copyright, 1916, by
Nicholas Power Company

General Information

Ordering

All orders should be accompanied by full shipping instructions, specifying freight, express or mail; also giving route, if any special routing is desired.

Shipments of less than 100 pounds made by express or mail, at our discretion, unless otherwise ordered.

Orders by telegraph may be condensed by using the code words printed in connection with the prices given in this catalog.

Cable address "Nicpower". Codes used, A. B. C. (5th edition), and Western Union.

Terms

Cash with order, or C. O. D. upon receipt of twenty-five per cent. of the amount of the purchase to guarantee transportation charges, cartage and packing.

All remittances must be made in New York funds in the form of Post Office or Express Money Order, or New York draft.

Power's Cameragraphs are not shipped on approval.

Prices subject to change without notice.

Delivery

Goods delivered f. o. b. New York City. Our liability ceases when we receive the transportation company's receipt for the goods. No charge for packing or cartage except on special deliveries.

Guarantee

All Power's machines and accessories are sold under full guarantee. Any defects in material or workmanship will be promptly rectified, but claim must be made within five days after receipt of the goods. All defective parts must be returned to us for examination.

Patents

Power's Cameragraphs are fully protected by many U. S. and Foreign Patents, issued and pending. These patents are owned by Nicholas Power Company.

The public is warned against purchasing or using infringing apparatus.

Guarantee

We guarantee the mechanism of every POWER'S CAMERAGRAPH No. 6A and No. 6 to be free from defects of workmanship or material, and will replace free of charge within one year from date of sale, every part showing a defect of any character or which becomes worn out in service, provided such part is returned to us, charges prepaid, for inspection.

Foreword

IN PLACING this catalog in your hands, a few words of introduction may not be out of place.

Our business is to manufacture moving picture machines. A partial knowledge of what we have accomplished in that line, will, we believe, inspire you with confidence in our product.

THE NICHOLAS POWER COMPANY has a world-wide reputation. Power's Cameragraphs are used extensively in every country where moving pictures are shown; we think you know that. But you may not be aware of the following:

The literal head of this concern is, and has always been, Mr. Nicholas Power, an able designer and machinist, whose entire life has been devoted to mechanical research and invention.

For fifteen years he has been the head of the company bearing his name, which, starting under the most humble conditions, today occupies the largest factory of its kind in the world, doing more than 70 per cent. of the entire moving picture machine business of the American Continent, with a large and growing trade throughout the civilized world.

Our reputation rests securely on a rock bottom of business honesty, backed by the superior excellence of our product. What we have done in the past—and are achieving today—has been accomplished absolutely by sheer force of merit.

For many years we have maintained, at great expense, an experimental department which has been constantly at work endeavoring to produce a moving picture machine free from the defects present, in greater or less degree, in all moving picture machines offered to the public. Our factory is fully equipped with the machinery needed to obtain that extreme accuracy necessary in the manufacture of parts for moving picture machines. The first consideration in the design of Power's Cameragraph No. 6A has been the production of a moving picture machine which will give long and constant service with the least possible wear of the moving parts. Other important objects sought in the manufacture of the No. 6A Cameragraph have been the elimination of all flicker; the projection of perfectly steady pictures; the providing of every possible device to insure absolute safety in handling inflammable celluloid films and the arrangement of film feeding and take-up devices which will prevent wear or scratching of the films.

All of these objects have been attained. In Power's Cameragraph No. 6A we present to the moving picture fraternity the best product of the mechanical genius and long experience of Mr. Nicholas Power, who for fifteen years has been known to American moving picture exhibitors as the foremost designer and manufacturer of motion picture apparatus.

In the following pages are offered illustrations and descriptions of POWER'S CAMERAGRAPH, justly styled by the moving picture public, "the modern motion picture machine."

The models here presented are Nos. 6 and 6A. The No. 6 has been a favorite with exhibitors, operators and patrons of moving picture theatres. Its continued popularity in North and South America, Europe and Australasia, has determined a continuance of its manufacture, notwithstanding the appearance of the later model No. 6A, designed especially to meet more exacting conditions brought about by sharp competition in the art of projecting motion pictures.

The No. 6A, our newest apparatus, will be found to possess many vital improvements, which greatly increase the efficiency of POWER'S CAMERAGRAPH.

Detailed descriptions are here given both models; the new No. 6A being presented first, followed by the No. 6, well known to all American and foreign exhibitors.

NICHOLAS POWER COMPANY

Power's Cameragraph No. 6A

Hand Drive

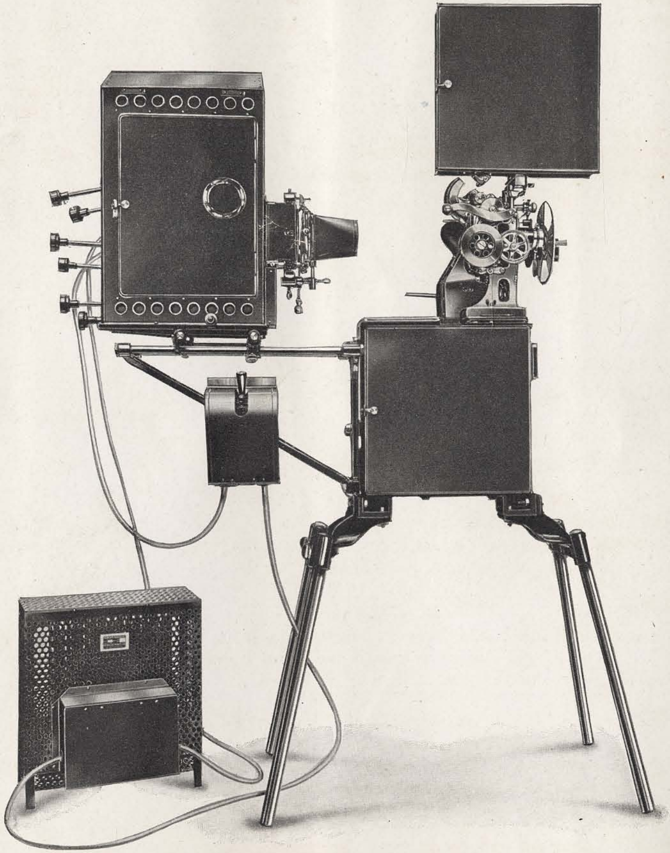


Fig. 1

Power's Cameragraph No. 6A

In this latest equipment we have still further added to the high efficiency already possessed by Power's Cameragraph No. 6. The improvements are numerous as well as vital. Brief mention is as follows:

Mechanism

The superior qualities of Power's No. 6 are everywhere recognized, and in the No. 6A equipment the No. 6 mechanism has been retained. This mechanism has proven its worth by perfect projection and substantial wearing qualities in thousands of installations all over the civilized world. In all climates from Alaska to the equator and in the hands of operators of all nationalities.

The Arc Lamp

Our new, improved "6A" arc lamp has a carrying capacity of 100 amperes. It has fourteen adjustments, amply providing for every possible arrangement of the carbons. All adjustments are accomplished without opening the lamphouse door. The "6A" lamp accommodates carbons ⅜ to ¾ inches in diameter, 6 inches lower, 12 inches upper.

The Lamphouse

This has been entirely remodeled and greatly improved. It is much larger, far more roomy, has a door on each side, and the lamp is much more accessible. The ventilation is so vastly superior that the breakage of condensers is, to a great extent, lessened.

The Stand

The stand is now made entirely of iron and is absolutely rigid. By easy and rapid adjustment of the legs it can be tilted to any angle desired. The lower magazine has been built into it and will accommodate a 14-inch reel.

Film Shields

The improvement here is such that the film is practically enclosed from the time it leaves the upper magazine until the lower magazine receives it. This reduces fire liability to a minimum.

This new equipment possesses the following important strong points:

Increased lamp carrying capacity, hence less lamp resistance.
Absolute rigidity, steadier pictures.
Film entirely enclosed, greater safety.
Better lamphouse ventilation, less condenser breakage.
Longer carbons, less waste, less retrimming of the lamp.
More and better lamp adjustments, better light. Larger magazines.

Power's Cameragraph No. 6A

Motor Drive—Mechanical Speed Control

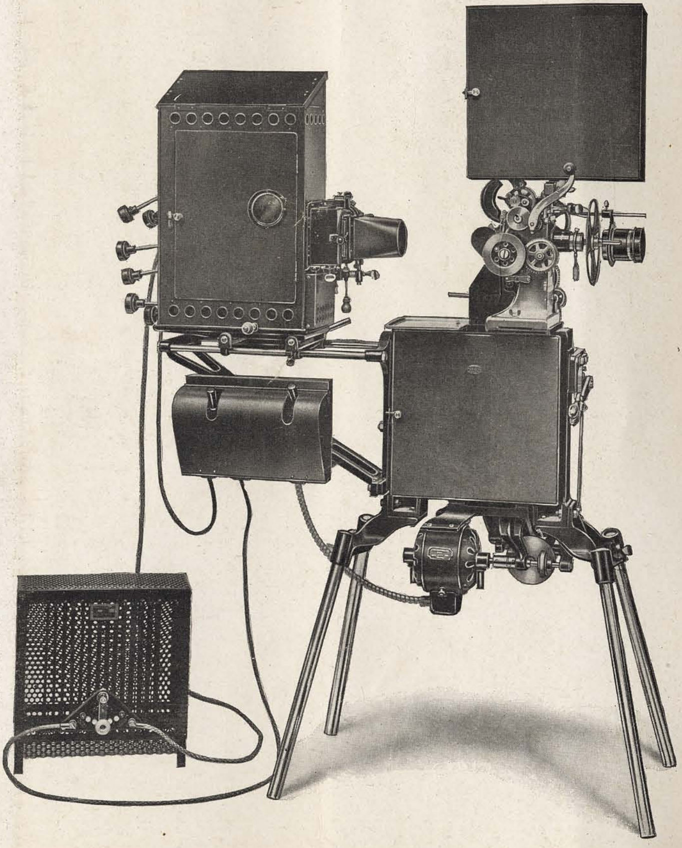


Fig. 2

). 6A

ers, Department of Water Supply,
r municipalities, states, etc.,
atus.

attachment.
wer film shields.

hment.
r sockets.
, slide carrier, etc.

or alternating current, 25

	Code Word	
....	*ebanot*	$260.00
pparatus.	*eban*	245.00
n attach- ields and		
....	*ebeto*	143.75
r.......	*ebrot*	133.75
C. motor		
igure 2..	*ecatom*	307.50
tor.....	*eceden*	267.50
otor....	*ecedot*	257.50
....	*ecelad*	250.00
....	*egotos*	12.00
....	*ecelos*	5.00
nstead of		
....	*ecesis*	50.00

alternating current is used.
lowances see page 51.

REVISED PRICE LIST OF EQUIPMENTS.

NICHOLAS POWER COMPANY.
Incorporated.

No. 6 Model Machine with Loopsetter, Hand Drive	$265.00
No. 6A " " " " " "	290.00
No. 6B " " " " " "	330.00
No. 6 " " " " & Calcium Burner	255.00
No. 6A " " " " " " "	275.00
No. 6B " " " " " " "	305.00
No. 6 " " " " Incandescent, Hand Drive	260.00
No. 6A " " " " " " "	285.00
No. 6B " " " " " " "	315.00
Power's Road Equipment (Carbon Arc) Hand Drive - Loopsetter	305.00
No. 6 - 6A - 6B Model Mechanisms complete with Loopsetter	175.00
Motor Attachment 6A or 6B	8.00
110 Volt Direct Current or 60 Cycle Alternating Current Motor with Mechanical Speed Control for 6A or 6B	50.00
220 Volt Direct Current or 60 Cycle Alternating Current Motor with Mechanical Speed Control for 6A or 6B	55.00
110 or 220 Volt Alternating Current Motors with the Cycle other than 60, prices upon application.	
No. 6A Model Machine, Mass. approved	353.00
No. 6B " " " "	393.00
No. 6A " " Chicago "	366.00
No. 6B " " " "	395.00

Effective February 15, 1918.

F.O.B. New York.

Power's Cameragraph No. 6A

Complete Equipment

Approved with Motor Drive by the National Board of Fire Underwriters, Department of Water Supply, Gas and Electricity of New York City and practically all other municipalities, states, etc., which have laws pertaining to such apparatus.

Cameragraph Mechanism No. 6A with stereopticon attachment.
Style "B" automatic fire shutter with upper and lower film shields.
14-inch upper magazine.
14-inch lower magazine with patented take-up attachment.
Cast iron stand with adjustable legs and set of 4 floor sockets.
Lamphouse complete with sliding ways, condensers, slide carrier, etc.
No. 6A arc lamp.
High grade motion picture objective lens.
High grade stereopticon objective lens.
60 ampere double pole knife switch with slate base.
Russia iron switch cover.
Set of asbestos wire connections with solderless lugs.
Enclosed adjustable rheostat for 110 volts, direct or alternating current, 25 to 40 amperes, with adjusting switch.
Two 14-inch reels.
"Perfect" film rewinder.
Automatic loop setter.

Prices	Code Word	
Price complete, as listed	*ebanot*	$260.00
With Standard calcium burner instead of electric light apparatus	*eban*	245.00
Mechanism only, without lenses, but with stereopticon attachment, Style B automatic fire shutter, No. 6A film shields and loop setter	*ebeto*	143.75
Mechanism only, as stated above, but without loop setter	*ebrot*	133.75
Variations in Equipment		
With 110 volt, 60 cycle, constant speed motor, A. C. or D. C. motor attachment and automatic loop setter, as shown in figure 2	*ecatom*	307.50
With motor attachment and loop setter, but without motor	*eceden*	267.50
With motor attachment, but without loop setter and motor	*ecedot*	257.50
Without loop setter, motor attachment and motor	*ecelad*	250.00
Additional for		
220 volt rheostat	*egotos*	12.00
220 volt, 60 cycle, A. C. or D. C. motor	*ecelos*	5.00
Power's Inductor for 110 or 220 volt, 60 cycle A. C. instead of rheostat	*ecesis*	50.00

The Inductor is strongly recommended wherever alternating current is used. For complete description see page 33. For table of allowances see page 51.

Power's Cameragraph

No. 6A Mechanism, Showing Film Shields

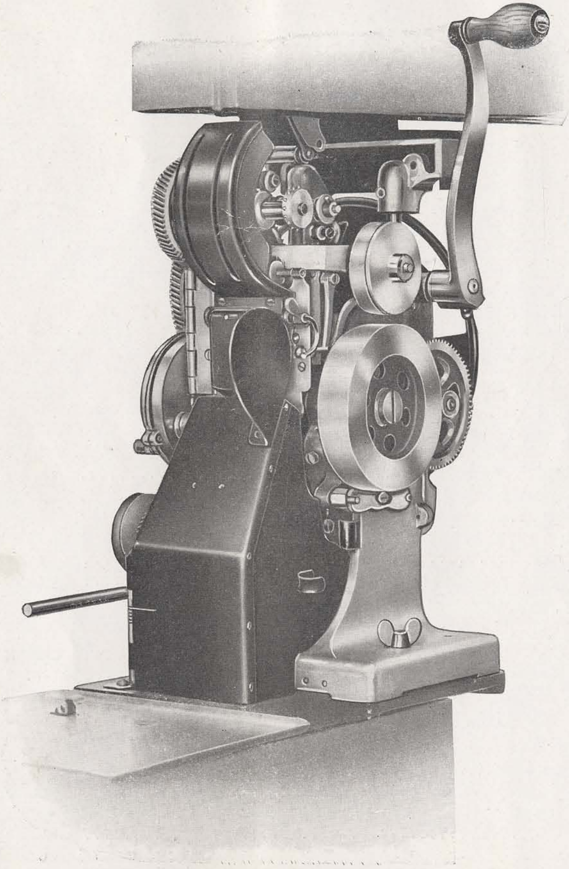


Fig. 3

The Mechanism or "Machine Head"

This is the most vital part of a moving picture projecting machine, and no degree of excellence in the rest of the equipment will atone for defects in it. For this reason, the design of the No. 6 A mechanism has been made the subject of the most thorough and constant study from the first. While the lamphouse, lamp, film magazines and stand have all been designed with thoughtful study, on the mechanism itself the best efforts of the designer have been expended. In it are embodied the results of many years experience as a builder of and dealer in moving picture machines and exhibitor of moving pictures, and the needs of the theatre owner, the operator and the patron of the moving picture theatre have been constantly kept in view.

Every part of the No. 6 A mechanism is made of the best material that money can buy, and the workmanship is of the highest quality. Our factory is equipped with the latest and best machine tools available, and our workmen are capable mechanics of thorough training and of long experience. Every part of the mechanism is of ample size and strength to withstand the strain of constant service for many hours every day in the year. The frame is heavy and rigid; the gears are of the large diameter and wide face, with spirally cut teeth which reduce noise, eliminate "backlash," and insure steadiness of operation. The larger gears are made of highest grade phosphor bronze, which reduces friction to a minimum. The pinions are cut from the grade of machine steel best suited to withstand wear. The bearings are of exceptional length, insuring perfect alignment of the shafts, or spindles, which latter are of extra large diameter, to prevent bending. All parts are perfectly interchangeable and are gauged with the highest degree of accuracy possible in manufacturing operations.

Prices	Code Word	
No. 6A mechanism with stereopticon attachment, automatic loop setter, automatic fire shutter, and No. 6A film shields.......	*ebeto*	$143.75

On account of its heavy construction, a high-grade machine oil or light dynamo oil should be used on the No. 6A and No. 6 mechanism. Thin oils are not recommended.

Framing the Picture

The picture is framed by a vertical movement of a carriage bearing the intermittent sprocket. The movement of the framing carriage does not alter the relation of the aperture, the projection lens and the revolving shutter. This is a very important feature, as it insures uniformly perfect projection regardless of the position of the framing carriage, and makes it unnecessary to design the mechanism so the shutter can be set while the machine is in operation.

The Film Feed and Take-up

This consists of three sprockets in accordance with the usual American practice. The top feed sprocket and the bottom take-up sprocket run constantly; and the middle, or intermittent sprocket, makes a complete turn in four successive movements with alternate periods of rest, which are five times as long as the period of movement. All sprockets are cut from specially selected steel, carefully tested for accuracy of size and form. They are then case hardened to insure long wear and are again tested for accuracy. The film is held in position upon the sprockets by means of rollers which are so supported that they do not press against the film, but obviate the possibility of disengagement of the film with the sprocket teeth.

Safety Devices

The most important accessories or details of equipment are those which are intended for the protection of human life. The safety devices designed by Mr. Nicholas Power to protect the film from fire, comprise upper and lower magazines with patented magazine valves, automatic fire shutter, and upper and lower film shields.

The Fireproof Film Magazines

Are of the square type, insuring easy insertion and removal of the film and reels, and are provided with the celebrated POWER'S PATENT FILM VALVES—the only valves that absolutely prevent the passage of flame into the magazine. The lower magazine is provided with Power's patent automatic take-up device, which maintains uniform tension on the film at all times, whether the reel be empty or full. (For full description and illustrations, see page 29.)

The Automatic Fire Shutter

Is simple in construction, positive in operation, and its operating mechanism is all readily accessible. The parts are constructed to withstand wear and operate with very little friction. A little heavy oil or melted vaseline should be used to lubricate the parts from time to time to insure perfect operation. (For full description and illustration, see page 28.)

The Film Shields

Completely enclose and protect the film in its travel from the upper to the lower magazine.

Revolving Shutter

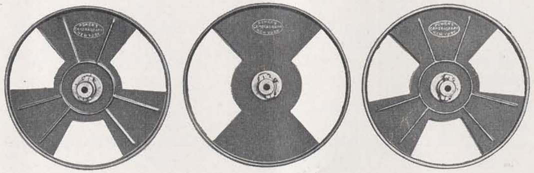


Fig. 6

The shutter is mounted on a spindle which projects forward from the front plate of the mechanism so that the shutter intercepts the rays of light in front of the projection lens. It should always be set as close to the lens as possible without incurring danger of its striking. The hub of the shutter consists of an inner and outer sleeve. The inner sleeve is directly attached to the spindle by means of a set screw and the outer sleeve is readily adjustable on the inner sleeve to permit quick and accurate setting of the shutter in proper relation to the intermittent movements. Mounted on the hub are the Russia iron wings, which are of three designs, as shown in Fig. 6.

The "Regular" three-blade shutter should be used on direct current with moving picture projection lenses of 3½-inch or longer equivalent focus. The "Short Focus" three-blade shutter should be used on direct current with moving picture projection lenses of 3¼-inch or shorter equivalent focus. The two-blade shutter should always be employed where alternating current is used in the lamp.

It is important that the shutter be suitable to the conditions under which the machine is operating, otherwise the best results will not be obtained. Owing to the rapid movement of the film produced by the novel No. 6 movement, the shutter wings are cut narrower than any shutters of similar types on other moving picture machines. Thus brighter illumination on the screen is obtained. As the shutter is mounted in front of the projection lens, a lens of the shortest possible focus may be used.

The shutter can be removed from the spindle and replaced without changing its adjustment, and the spindle is so mounted that it may be swung downward until it lies parallel with the front of the mechanism, where it will be protected from injury in shipment.

Power's Cameragraph

No. 6A Lamphouse, Lamp, Stand and Special Lower Magazine

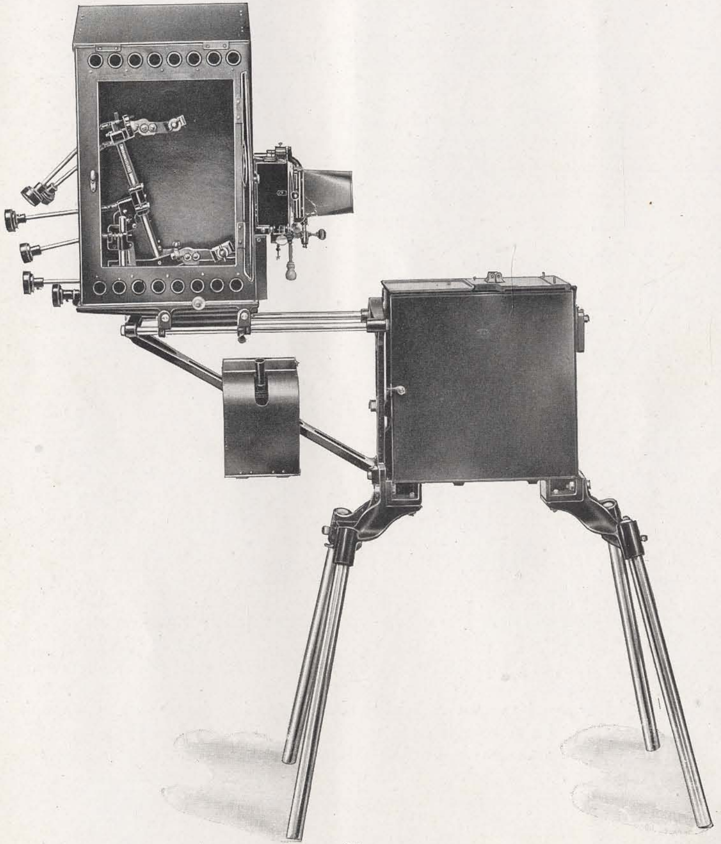


Fig. 7

No. 6A Equipment

(Code Word—*echido*)

The advantages to be derived from the use of the heavier, more substantial and more completely adjustable No. 6A arc lamp, lamphouse, stand, etc., are so numerous that they are very much in demand. Those who own No. 6 mechanisms in good condition will be pleased to learn that they can be used with the No. 6A equipment with excellent satisfaction. The thousands of users of No. 6 machines can readily convert them into No. 6A's by purchasing, at the following prices, parts shown in Fig. 7, retaining for use with the new equipment, their mechanism, lenses and upper magazine.

Prices	Code Word	
No. 6A lamphouse, complete	*elud*	$30.00
No. 6A arc lamp	*emcot*	25.00
No. 6A stand	*ecats*	20.00
No. 6A special 14-inch lower magazine with take-up	*efrul*	19.50
No. 6A upper film shield	*educh*	.75
No. 6A lower film shield	*educom*	4.25
No. 6A switch and cover	*encomo*	4.75

Power's Cameragraph No. 6

Complete Equipment

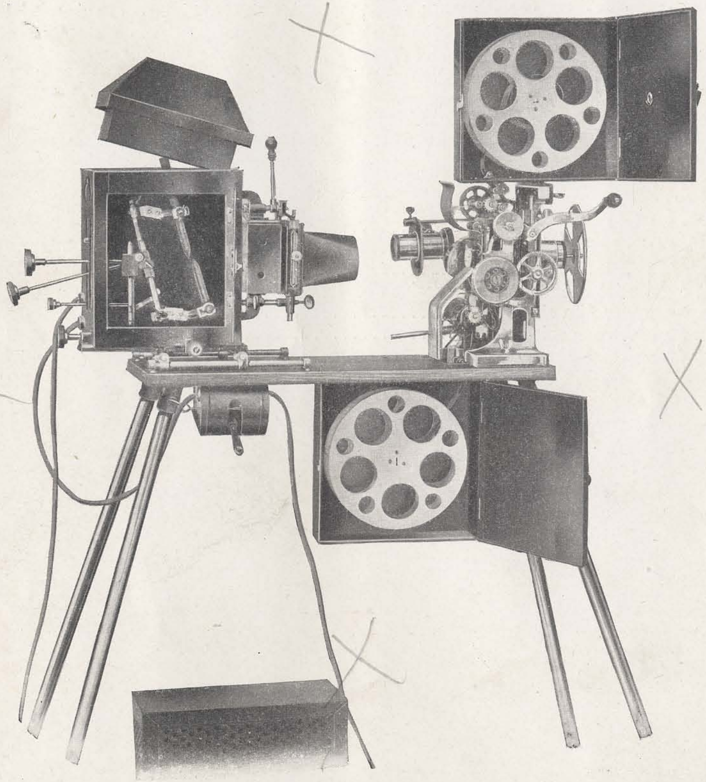


Fig. 8

Power's Cameragraph No. 6

Complete Equipment

Approved by the New York Board of Fire Underwriters and the Department of Water Supply, Gas and Electricity.

Cameragraph mechanism No. 6 with adjustable stereopticon attachment.
Style B, automatic fire shutter, upper and lower film shields.
12-inch upper film magazine.
12-inch lower film magazine with patented take-up attachment.
Table board with leg flanges.
Set of 4 telescoping tubular legs, nickel plated.
Set of 4 floor sockets.
Lamphouse complete with sliding ways, condensers, slide carriers, etc.
"Perfect" electric arc lamp.
High grade motion picture objective lens.
High grade stereopticon objective lens.
Double pole knife switch with slate base.
Russia iron switch cover.
Set of asbestos covered wire connections with solderless lugs.
Approved rheostat for 110 volts alternating or direct current.
Two 10-inch reels.
Perfect film rewinder

Prices	Code Word	
Price complete, as listed	*edacot*	$225.00
With Standard calcium burner instead of electric light apparatus	*edabat*	215.00
Mechanism only, without lenses, but with stereopticon attachment and Style B automatic fire shutter	*ebie*	132.50
Additional for		
220 volt rheostat	*egotos*	12.00
Power's Inductor instead of rheostat	*ecesio*	50.00
Power's Little Giant Current Saver instead of rheostat	*edrat*	30.00
Automatic Loop Setter	*ecatoe*	10.00

(For table of allowances, see page 51.)

Power's Cameragraph

No. 6 Mechanism, showing Automatic Shutter and No. 6 Film Shields

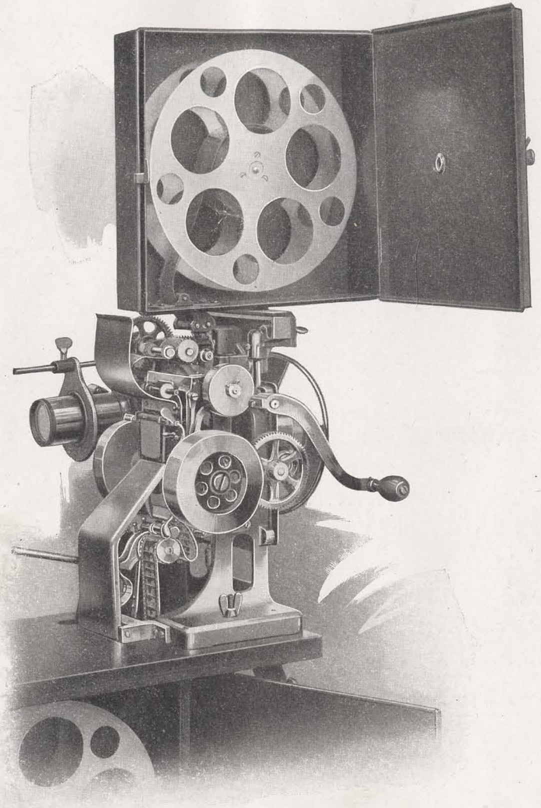


Fig. 9

Power's Cameragraph No. 6

Power's Cameragraph No. 6 having the same mechanism or head as the No. 6A, (as described on page 13), projects pictures as steady and free from flicker. The lamphouse, lamp and stand are of different design and lighter construction. This makes the No. 6 especially desirable for lectures and traveling exhibitors who have frequent occasion to take the machine apart, transport it and set it up again. Its design lends itself admirably to this class of work.

The Lamphouse

The lamphouse is of substantial construction, with removable top and back. Doors are provided on both sides and made as large as possible to afford ready access to any part of the lamp. The sliding ways consist of substantial rods, affording all necessary forward and backward, as well as lateral movement needed in focusing for stereopticon and moving picture projection.

Condensers and Support

The two condensing lenses are carried in a rectangular box which is permanently attached to the front of the lamphouse. Each lens is held in a separate holder or clip, which can be instantly removed in case of breakage of the condenser without disturbing the other condenser. The lenses are of the very best quality triple annealed lead glass, and the holders or clips are so designed that perfect freedom of expansion and contraction is permitted, thus lessening the danger of breakage.

The Arc Lamp

The arc lamp is more adjustable than any other on the market except our No. 6A. The parts are heavy and will withstand intense heat and heavy strain. The carbon holders (patent applied for) have 75 amperes capacity. The carbons are clamped so rigidly that perfect electrical contact is assured. The carbons can be set in position to secure the best possible results with both direct and alternating current and the carbon holders may be shifted laterally, either together or independently while the current is on. The back and forward movement of the lamp is accomplished by a rack and pinion, insuring quick adjustment and rigid support.

The Rheostat

The rheostat furnished with the No. 6 is either adjustable or non-adjustable, as desired, and is of either the grid or wire coil type. The rheostats regularly furnished are calculated to supply at least 25 amperes of current on 110 volt circuit. The resistance elements are of ample size to insure long service.

The Machine Table

The table or stand has a top of oil finished walnut and is mounted on a set of telescoping legs of steel tubing, heavily nickel plated. These fit into rigid iron leg sockets or flanges in which they are tightly clamped by set screws. To insure rigidity a set of floor sockets are also furnished.

The Projection Lenses

For description of projection lenses used in Power's No. 6, see page 42.

Power's Road Equipment

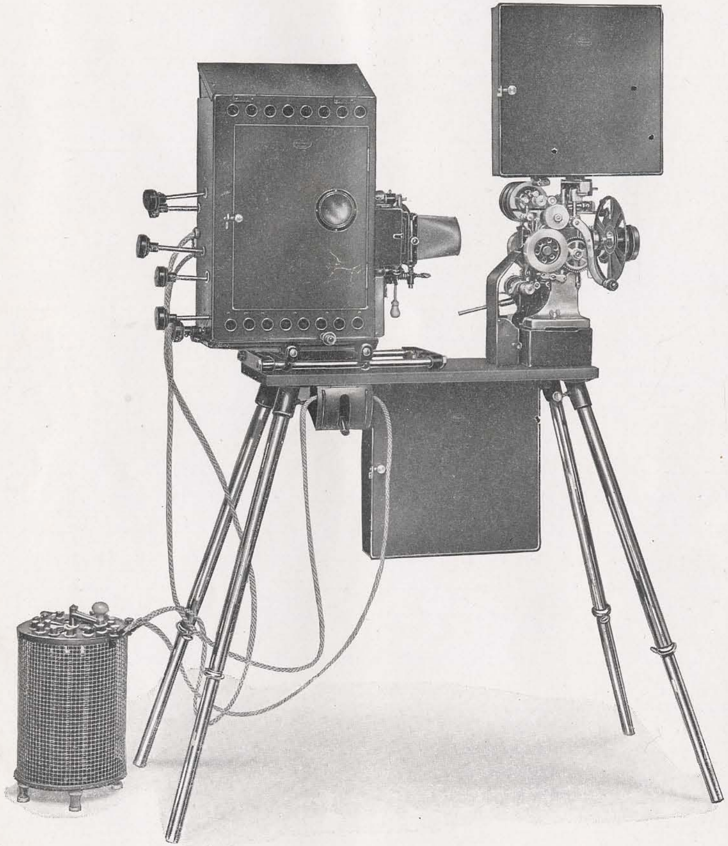


Fig. 10

Power's Road Equipment

For traveling we have designed a portable outfit as shown on Page 22. This equipment is used extensively and is considered the standard among traveling exhibitors. It was used for the presentation of "Quo Vadis," "Traffic in Souls," "Last Days of Pompeii," "Les Miserables," and many other well-known pictures.

The special feature of this equipment is that it can be securely packed in trunks and transported without cost for excess freight.

This special outfit consists of the No. 6 Model Cameragraph combined with the No. 6A lamphouse, also 110-220 volt adjustable rheostat.

Prices	Code Word	
Power's Special Road Outfit, complete as illustrated on opposite page	*eqino*	$261.00

Intermittent Movement

With oil-tight casing

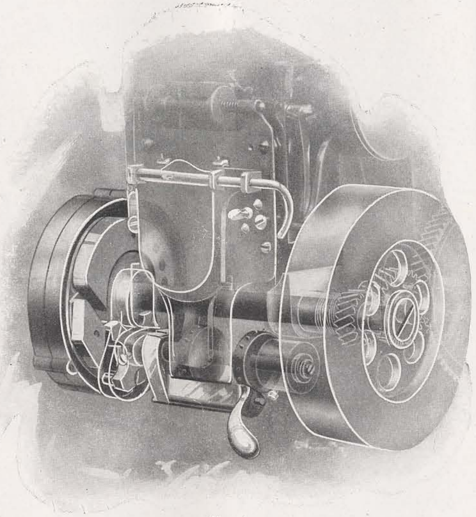


Fig. 4

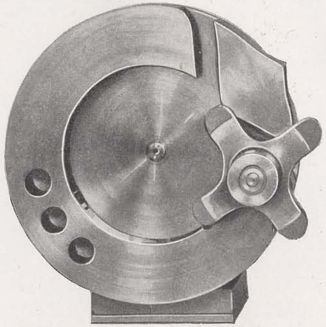


Fig. 4B

Showing cam and cross-pin

Power's Intermittent Movement

Too much prominence cannot be given to our intermittent movement. This vital part of the motion picture mechanism, upon the proper performance of which depend steadiness and definition in the picture, is the result of long experience and experiment on the part of Mr. Nicholas Power. It is distinctive and original in design and is used exclusively on machines of this company's manufacture. It has extreme advantages over "Star and Pin Wheel," "Beater," "Claw" and other movements in the long period of rest allowed, the gradual, easy, yet rapid transition and its comparatively larger size. Long period of rest, in connection with easy wear on the film, is what has been mainly sought in motion picture machine manufacture, because of the greater definition it affords. The quick change from one picture to another is, of course, co-relative with the longer period of rest, and, when accomplished with ease, giving no jerky strain, is most desirable. The comparatively larger size of the intermittent movement insures much longer life and better wearing qualities than those of others. A comparison of weights show our "Cam and Cross Pin" with spindle weighing 8 ounces, while the usual "Pin Wheel" with "Star" and Spindle totals 1¼ ounces.

Only two parts are embodied in the intermittent movement. Its driving element is a diamond shaped revolving cam of hardened tool steel, which is formed integral with a heavy steel disc rigidly secured to the main spindle or shaft of the mechanism. A locking ring for the driven element is also formed on the face of the disc in such relation to the cam that the driven element passes, without noise, from engagement with the cam into engagement with the locking ring. The driven element, the four pin cross with the intermittent sprocket spindle are formed out of one block of drop forged tool steel, preventing the possibility of the pins loosening and being forced out of proper relation with the cam. The pins are ground with such accuracy that a variation of one ten-thousandth of an inch under exact measurement causes the cross, or driven element, to be discarded. The intermittent movement is enclosed in an oil tight casing having an oil cup, and by keeping the casing properly supplied with high grade machine oil, a practically noiseless operation of the movement, without perceptible wear on the parts, is insured.

Automatic Loop Setter

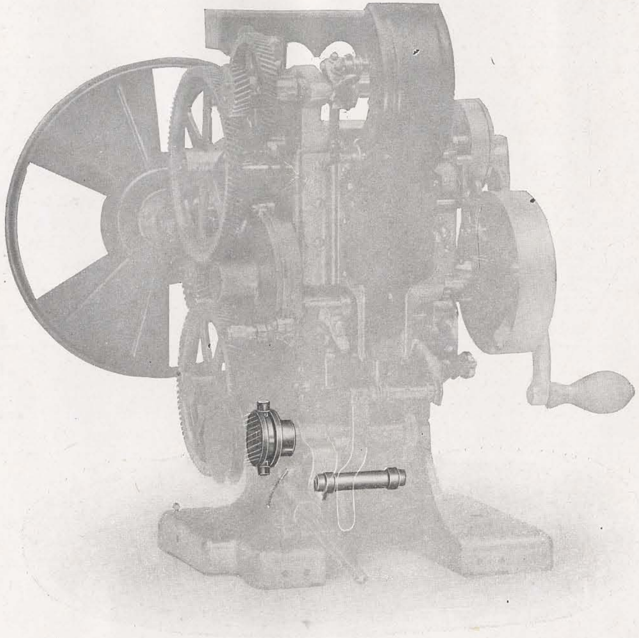


Fig. 5

Automatic Loop Setter

It has been fairly well established that the loss of the lower loop occasioned by bad patches, torn film, too much tension on the take-up, and other imperfect conditions, is one of the most frequent troubles that beset the operator during projection of pictures. As a result the exhibitor suffers through his audience becoming dissatisfied at the interruption of the programme. This annoyance must constantly occur on all machines upon which no special means are provided to overcome it. Worry from this source ceases when our Automatic Loop Setter, the invention of Mr. Nicholas Power, is used.

The Automatic Loop Setter is an ingenious and exclusive patented device, used only on our machine. It has met with the approval of both operator and exhibitor, inasmuch as it eliminates this generally conceded most frequent source of trouble. Its construction is simple; it is connected directly with the take-up by means of an automatic clutch arrangement, and passing the film under the roller when threading the machine is the simple means by which its operation is introduced. When the lower loop is lessened or lost, the roller is elevated so as to disengage the clutch connecting the lower sprocket with the take-up, permitting the lower sprocket to rest during one revolution of the intermittent sprocket; this permits the re-forming of the lower loop which automatically effects the re-engagement of the lower sprocket with the take-up.

This device resets the lower loop as often as 15 or 20 times within a minute where the ordinary defects in the film would have ripped it in any one instance.

Safety Devices

Automatic Fire Shutters

Some years ago Mr. Power designed, and has since continuously used the style B Automatic Fire Shutter, (Fig. 14).

The Style B Automatic Shutter

Is designed for mechanisms operated by either hand power or electric motor. Its action depends upon the speed at which the machine is operated. The operating mechanism consists of a centrifugal clutch and a lifting lever controlled thereby. This clutch is mounted on a spindle geared to the film feeding device and rotated at a corresponding speed. As soon as the travel of the film reaches proper exhibiting speed, this clutch operates and moves the lever so as to elevate the shutter flap, which is pivoted on the gate of the mechanism over the projection aperture. When the speed of the film decreases, the clutch is automatically released and the weight of shutter causes it to drop into normal position, thus covering the projection aperture.

The Style B automatic shutter is supplied with both upper and lower film shields.

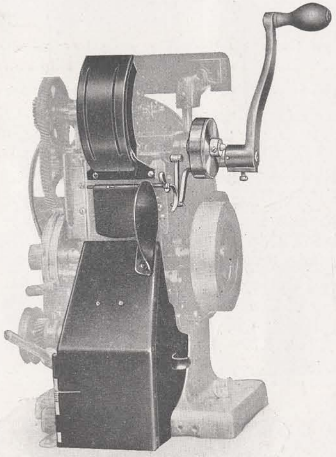


Fig. 14

Prices

	Code Word	
Style B automatic shutter, with No. 6 upper and lower film shields	*educat*	$12.00
Style B automatic shutter, with No. 6A upper and lower film shields	*educir*	13.25
No. 6A upper film shield	*educh*	.75
No. 6A lower film shield	*educom*	4.25

Fireproof Film Magazines

Among the safety devices supplied with Power's Cameragraphs the Fireproof Magazines are hardly less important than the Automatic Fire Shutter. These magazines are designed to afford complete protection to the film on both the supply and take-up reels. They consist essentially of square, heavy gauge Russia iron boxes, mounted on suitable supporting brackets and equipped with patent film valves through which it is impossible for flame to pass. A set of magazines includes the upper and lower. The general arrangement of these magazines and automatic valves is shown in Fig. 15B.

A feature of the lower magazine to which we wish to call special attention is the patented take-up device designed to wind the film on the lower reel. It is so designed that uniform film tension is at all times maintained, regardless of the quantity of film on the take-up reel. The tension is easily regulated and is such that there will be no excessive strain on the film. This patented take-up device is designed to be driven by a round, leather belt, running over a grooved pulley on the mechanism. Where the law requires it, or there is a special demand for it, we can furnish the take-up designed to be operated by a chain, driven by a sprocket on the mechanism. Power's Fireproof Magazines are supplied in two sizes, for 12-and 14-inch reels.

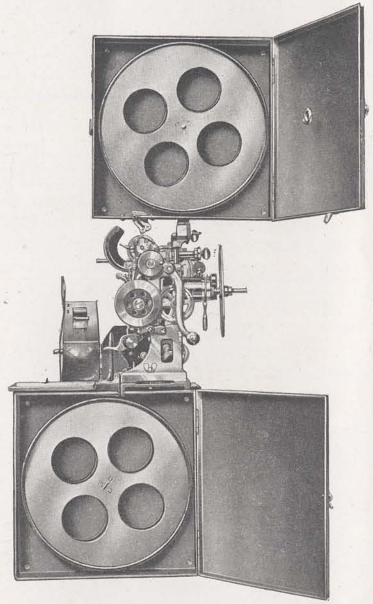


Fig. 15B

Prices

	Code Word	
12-inch upper magazine	*efad*	$10.00
12-inch lower magazine with take-up device	*efoam*	17.50
14-inch upper magazine	*efrit*	12.00
14-inch lower magazine with take-up device	*efrul*	19.50
Additional for sprocket where chain drive take-up is used	*ega*	2.50

Rheostats

Rheostats should **never** be used on alternating current for permanent installations. They are very wasteful, and are therefore recommended only for use on direct current circuits where transformers cannot be used. For alternating current Power's Inductor or Current Saver should be used (see pages 33 and 34).

The smallest and least expensive of our line of rheostats is the open, 25 ampere adjustable rheostat, Fig. 16. It is designed for use on 110 volts, direct or alternating current, and will carry 25 amperes without overheating. As the rheostat is entirely open, there is ample radiation. The coils are so supported that any of them can be replaced when desired. The adjustment is effected by means of a lever switch. This rheostat has been very popular for the past ten or twelve years. Where 40 to 50 amperes is required, two of the 25 ampere adjustable rheostats, connected in multiple, will be found inexpensive as to first cost and very satisfactory in operation.

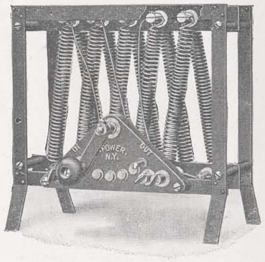


Fig. 16

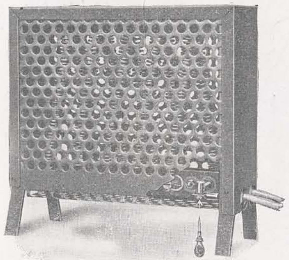


Fig. 17

Prices

	Code Word	
25 ampere open adjustable rheostat, Fig. 16....................	*egest*	$10.00
With perforated Russia iron cover, similar to Fig. 17...........	*egestom*	12.00

Our Underwriters' 25 ampere rheostat is shown in Fig. 17. It has the same number of resistance coils as the 25 ampere adjustable rheostat and is built in a similar frame. It is not, however, adjustable, and is always enclosed in a perforated iron cover. It is designed for operation on 110 volts, alternating or direct current.

	Code Word	
Price..	*egil*	$12.00

Our most popular rheostat is the 25 to 40 ampere 110 volt, iron grid rheostat. (See Fig. 18.) The resistance units are of gray cast iron, designed to carry, without undue heating, as high as 40 amperes. Their unique design permits of maximum

radiating surface. The deterioration due to frequent heating and cooling is not as great with this style of resistance material as it is with resistance wire. This rheostat fills the demand for a single rheostat delivering high amperage, and is recommended for moving picture projection on direct current.

	Code Word	
Price..	*egrat*	$18.00

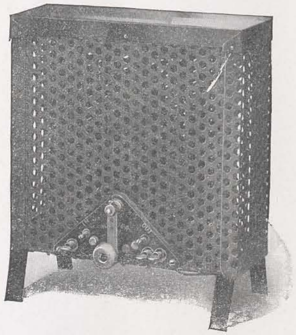


Fig. 18

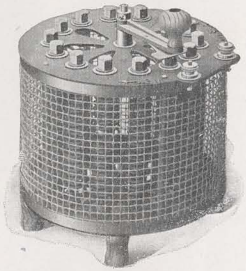


Fig. 19

The 120 volt circular rheostat, illustrated in Fig. 19 has coils of heavier resistance wire than the 25 ampere rheostat, and is intended to safely carry 30 to 35 amperes. It is of light but substantial construction, and well ventilated.

	Code Word	
Price..	*eginol*	$20.00

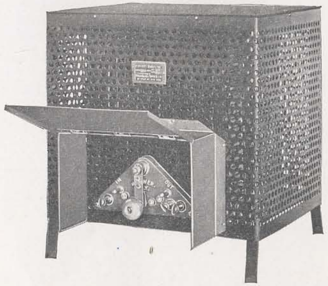


Fig. 20

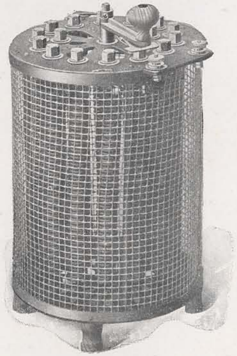


Fig. 21

Occasionally there are conditions which demand amperage as high as 70 to 75. We have designed an iron grid rheostat with a normal rating of 75 amperes on 110 volts, which has been used satisfactorily for the projection of Kinemacolor pictures and in many other installations where such an amperage is wanted. This rheostat is illustrated in Fig. 20.

Code Word
Price.. *egimor* $35.00

The 220 volt circular rheostat, Fig. 21, is similar in design to the 120 volt circular rheostat, but the coils of resistance wire are longer and it is adjustable for use on any voltage from 60 to 250. The coils will safely carry 35 amperes and are so arranged that the removal of a jumper quickly divides the rheostat into two parts, each of which then becomes a regular 110 volt rheostat, which can be used independently of the other half or in multiple. When used in multiple on 110 volts the two halves will produce a maximum of 50 amperes. They must, however, always be operated in series when operating on 220 volts, which provides a maximum amperage of 35. On account of its wide range of voltage and amperage and its light weight, but substantial construction, it is especially recommended to traveling exhibitors.

Code Word
Price.. *egot* $30.00

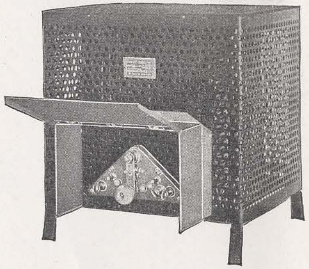


Fig. 22

For permanent installation on 220 volts, we recommend the 220 volt iron grid rheostat, Fig. 22. It has all the characteristics of the iron grid rheostats described heretofore, and will be found very satisfactory and enduring in actual service.

Code Word
Price.......... *egotos* $30.00

Where the law requires it, a Russia iron cover, such as is illustrated in Fig. 22, will be furnished for the adjusting switch and terminals in any of the above rheostats, except the circular types.

Code Word
Additional price for switch cover.................................. *eglo* $2.00

Electric Current Savers for Alternating Current

When it is considered that, on alternating current, the hand feed arc lamp as used in all moving picture machines, uses only 30 to 35 volts at the arc, while the electric current is supplied at from 104 to 250 volts, it becomes obvious that there is an extremely large percentage of current wasted unless some means can be employed, of transforming, or converting, without loss, the line voltage as supplied by the electric light plant into current at a suitable voltage for the arc lamp. Power's Adjustable Inductor, Fig. 23, and Power's Little Giant Current Saver, Fig. 24, are double coil transformers, built upon a principle which is well known to all electrical engineers and are conceded to accomplish the results claimed for them.

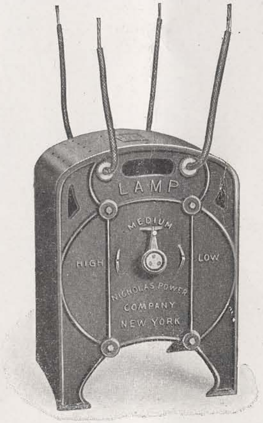


Fig. 23

These transformers are designed to secure the maximum economy of current, the absence of noise when in service, the elimination of heat which is so objectionable in all rheostats, and the most perfect arc regulation obtainable. In the last respect especially, they are undoubtedly superior to any other device of the same class on the market today. This results from the special "stray-field" type of transformer used, and insures the maintenance of a satisfactory light with less frequent feeding of the carbons than is possible with any other type of transformer. It is the universal experience of all purchasers of either Power's Inductor or Power's "Little Giant" current saver that all the objects contemplated in the design of these instruments have been realized. The saving of current on 110 volt circuits amounts to 60 per cent. or more; on 220 volt circuits to 80 per cent. or more. Both instruments are built for frequencies of 60 and 133 cycles and for voltages of 104 to 130 volts or for 208 to 260 volts. The amperages delivered at the arc are approximately 45, 55 and 65.

In ordering either type of current saver specify exact voltage and number of cycles of current, the length of throw and size of picture to be produced.

Power's Inductor is the highest class instrument of this character on the market today, being a "stray-field" transformer enclosed in a strong and handsome cover, designed to afford protection to the transformer, together with ample ventilation. The amperage delivered at the arc is controlled by a three-point switch mounted inside the casing, with an operating handle extending through so as to be conveniently accessible.

	Code Word	
Price, Fig. 23	*ecesio*	$60.00

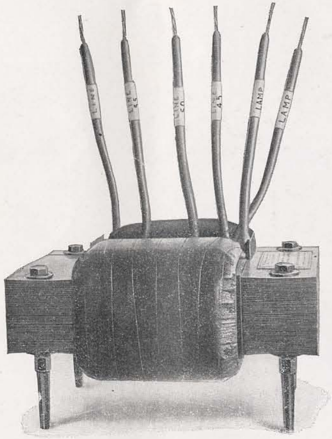


Fig. 24

Power's "Little Giant" current saver comprises the transformer without any casing and without any switch to control the amperage at the arc. The "Little Giant" is mounted on heavy legs, which support it several inches above the floor. Instead of a switch to control the amperage at the arc, the "Little Giant" is provided with a plurality of leads for connection with the wall switch, each lead being marked to show the amperage obtainable when that lead is used.

	Code Word	
Price, Fig. 24	*edrat*	$40.00

Lamphouses

No. 6A Lamphouse

The No. 6A lamphouse, Fig. 28, is our very latest and best design and is recommended for professional work in permanent installations. It is made of extra heavy Russia iron, of generous overall dimensions, and is particularly well ventilated. The top is practically all of perforated metal, allowing the hot air and gases from the arc to readily escape. A hinged cover, supported with side pieces, protects the perforated metal top and directs the hot air and gases away from the operator. The back of the lamphouse is practically all enclosed, the small holes provided for the adjusting handles on the arc lamp being all of but slightly larger diameter than the rods passing through them. This is made possible by the universal joints on the various arc lamp adjusting handles. Heavy sheet mica properly placed prevents short circuits by reason of contact of the carbons with the lamphouse. The sliding ways are of extra heavy rods, while the adjustable condenser mount and slide carrier are of an improved design. The dowser is operated by a handle from underneath; and as it swings down instead of up, it is not in the way when handling the stereopticon slides. This will be appreciated by operators. Only the No. 6A arc lamp can be used in the No. 6A lamphouse.

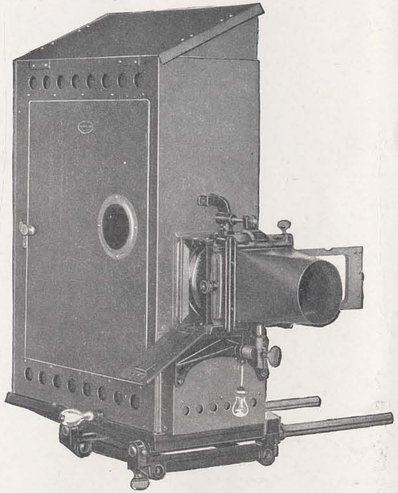


Fig. 28

Prices	Code Word	
No. 6A lamphouse, complete	*elud*	$30.00
No. 6A lamphouse, complete, with No. 6A arc lamp	*elufo*	55.00
No. 6A lamphouse, arc lamp, stand and special lower magazine	*elupit*	94.50

No. 6 Lamphouse

The No. 6 lamphouse, Fig. 27, is smaller than the preceding one and has a removable top and back. Doors are provided on both sides and are made as large as possible to afford ready access to every part of the arc lamp. The lamphouse is mounted on a heavy cast base, carried by a set of adjustable sliding ways, which provide forward and backward, as well as lateral movement for the proper focusing of the light. The two condensing lenses are carried in a rectangular box, having a hinged door on its side, permitting the instant removal of the condensers in their separate holders or clips. In case of breakage, one condenser can be quickly removed and replaced without disturbing the other. The dowser is mounted in front of the condensers and serves to shut off the light when the machine is not in operation, or while stereopticon slides are being changed. The slide carrier is made of sheet steel of heavy gauge and is of the latest design. Only the No. 6 or "Perfect" arc lamp can be used in the No. 6 lamphouse.

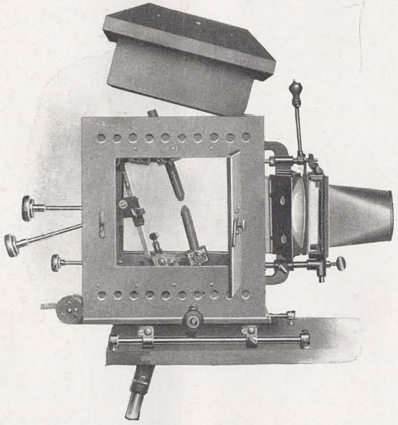


Fig. 27

Prices	Code Word	
No. 6 lamphouse, complete	*elog*	$26.00
No. 6 lamphouse, complete, with No. 6 lamp	*elogum*	41.00

Arc Lamps

The No. 6A arc lamp, Fig. 32, is the last word in arc lamp design. It has carrying capacity for 100 amperes and is provided with every possible adjustment. All adjustments are accomplished from the outside of the lamphouse, thus insuring the greatest safety and ease of operation. It will take carbons as small as ⅜-inch or as large as ¾-inch in diameter, and of 6 inches length in the lower carbon holder and 12 inches length in the upper carbon holder; thus the carbon waste due to stubs, which have to be thrown away, is reduced to a minimum; also as frequent retrimming is not necessary with the longer carbons, there are less interruptions to the show and less attention is required on the part of the operator. The carbons can be placed at any angle desired. They can be moved independently of each other forward, backward and sideways, or the whole lamp can be swung forward or backward, laterally, and up and down. On account of its large size it can only be used in the No. 6A lamphouse. The No. 6A arc lamp is specially recommended for professional moving picture projection where high amperage and long hours of service are the rule.

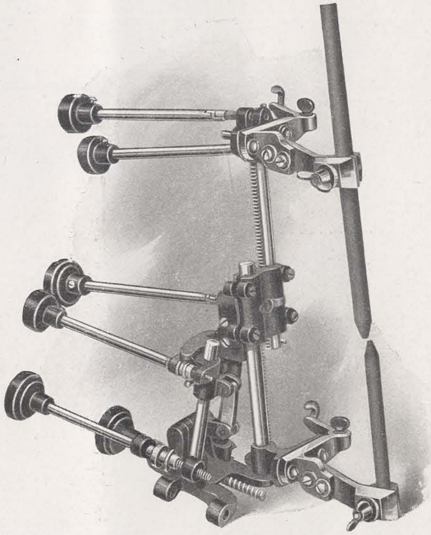


Fig. 32

	Code Word	
Price, No. 6A arc lamp, complete, with base	*emcot*	$25.00

Power's No. 6 or "Perfect" arc lamp, Fig. 31, is much heavier than the "Regular" lamp. It is designed to carry current up to 75 amperes and has better range of adjustment than the "Regular." It will be found the best lamp for use in No. 6 lamphouses for professional work.

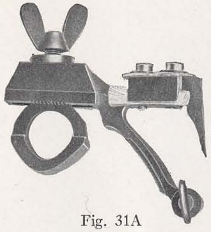


Fig. 31A

	Code Word	
Price No. 6 or "Perfect" Arc Lamp, complete, with base	*emul*	$15.00
Price No. 6 or "Perfect" Arc Lamp, without base	*emuto*	14.00

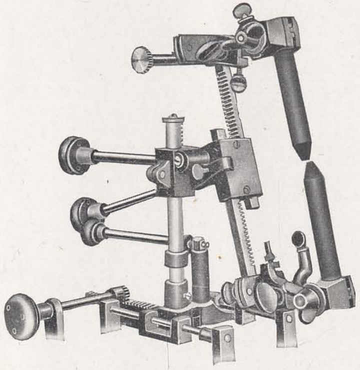


Fig. 31

Our "Regular" arc lamp, Fig. 29, is a simple and inexpensive lamp, provided with sufficient adjustment to enable a capable operator to handle either alternating or direct current and to insure the proper light on the screen. The special feature of this lamp is the form of its carbon holder, which is illustrated in Fig. 30. It will be noted that the binding posts for attaching the wire is at the end of an arm extending backward from the jaws, thus keeping the conductor as far as possible from the heat and gases of the arc.

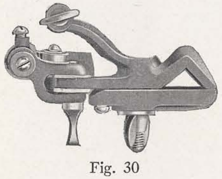


Fig. 30

The "Regular" arc lamp is not intended to carry heavier than 30 to 35 amperes.

	Code Word	
Price, without base	*emend*	$8.00

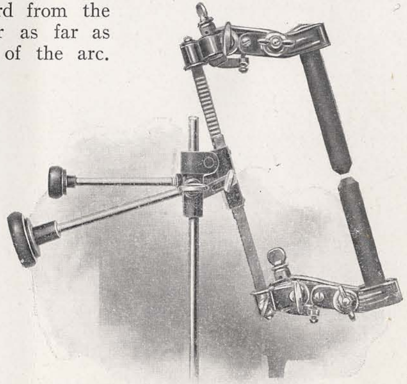


Fig. 29

Switches and Switch Covers

The switches supplied with Power's Cameragraphs are of the double pole, single throw type, mounted on heavy slate bases and of two sizes, as listed below. Suitable switch covers of heavy Russia iron, with bushings for the protection of the wires, are furnished. The smaller size switch and switch cover is regularly supplied with the No. 6 machine, while the larger size is furnished with the No. 6A machine.

Prices	Code Word			Code Word	
30 ampere switch	*encic*	$ .75	60 ampere switch	*encom*	$1.75
Switch cover for 30 ampere switch	*encicol*	1.50	Switch cover for 60 ampere switch	*encomol*	3.00

Condensers

Our condensers are all of 4½ inches diameter, which is the American standard. We regularly carry in stock two focal lengths, namely 6½ and 7½ inches. We can supply, on special order, condensers of 8½ inches and 9½ inches focus. The latter are used for long focal length M. P. and stereopticon lenses. These condensers are made of the best quality of carefully annealed pure lead glass. They are guaranteed to be equal to any on the market. In ordering condensers, always specify the focus desired.

Prices	Code Word			Code Word	
6½ inch focus	*energ*	$1.00	8½ inch focus	*enfas*	$1.50
7½ inch focus	*energol*	1.00	9½ inch focus	*enfasil*	2.00

Asbestos Covered Wires and Lugs

We supply National Code connecting wires of approved design, made of stranded flexible copper conductors covered with and insulated by a heavy braided asbestos covering. No. 6 wire is recommended for all moving picture projection circuits. No. 10 wire should only be used for 20 amperes and less.

Prices	Code Word			Code Word	
No. 6 wire, per foot	*enfit*	$ .12	No. 10 wire, per foot	*enfuts*	$ .10

Two styles of lugs are carried in stock. The bent solderless terminals, commonly used, are not recommended for currents above 35 amperes. For heavier current we recommend our 60 ampere lug, designed for heavy duty. By its unique design, when the asbestos covered wire is attached to it, it does not expose any of the fine copper strands to the heat and gases from the arc, thus protecting it from the oxidization which causes the copper strands to become brittle and break off.

Prices	Code Word	
30 amperes, bent solderless lugs, each	*entel*	$ .10
60 ampere special heavy duty lugs, each	*entio*	.25

Power's New Dissolving Stereopticon

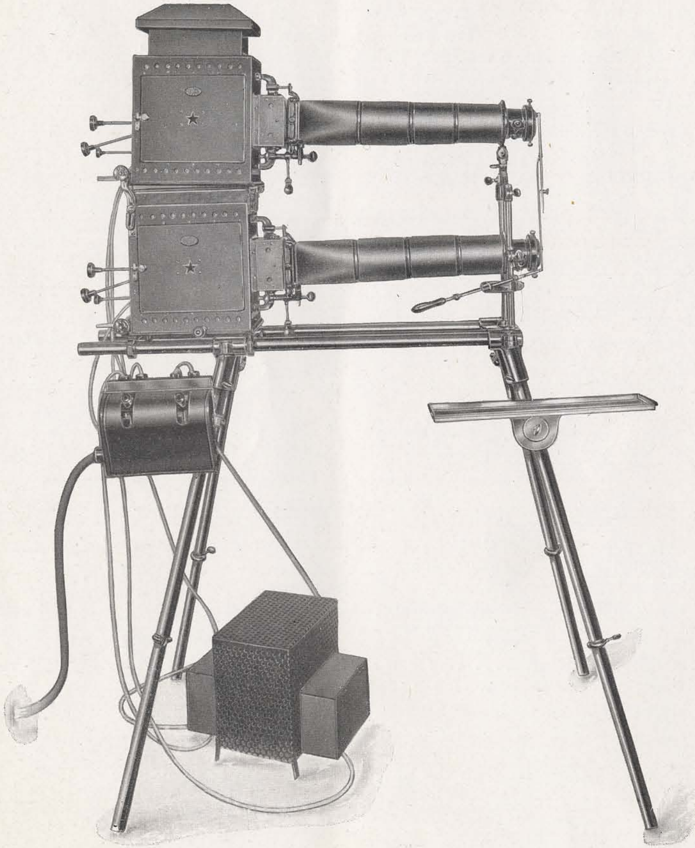


Fig. 36

Power's New Dissolving Stereopticon

The dissolving of stereopticon views is increasing in popularity, and our new apparatus, of distinctive design and construction, is meeting with phenomenal success in theatres, colleges and schools. The Dissolver can be easily handled and can be conveniently placed for operation in any part of a theatre or hall.

The Stand

The telescoping legs allow of ample adjustment, and the height from stand to the floor may exceed 6 feet. The frame is of seamless tubing, light and substantial, with all possible adjustment to obtain the correct image on the screen.

Lenses

These are of special design to meet the exacting conditions imposed by eminent lecturers. Iris diaphragm dissolvers are used. Special attention is directed to the varied adjustment of the lenses. By an unique universal joint arrangement, every conceivable position wished for can be obtained; the lenses cannot get out of alignment. Between the condensers and diaphragms are placed telescoping funnels, the maximum amount of light passing through the stereopticon lenses.

A shelf having a tilting universal joint so that it can be set horizontally, regardless of the position of the lantern, is placed on the front leg. This shelf can be placed in or outside, as well as across the front, or in such position as desired for the convenience of the operator, and will hold a large size slide box.

Lamphouses and Lamps

These are the same as furnished with Power's No. 6 Cameragraph, which have met with universal approval. The arc lamp is Power's "Perfect," known as the most easily adjusted arc lamp on the market, being set in a well-constructed and ventilated lamphouse, with handles on the outside, permitting easy manipulation. Burners for use with calcium gas can be furnished with this outfit when desired. The condensing lenses are placed in a rectangular box having a hinged door on its side permitting the instant removal of condensers in their separate holders or clips. The lamphouses are equipped with dowsers.

Accessories

The rheostats supplied are mounted as a unit. They are for 110-volt alternating or direct current and adjustable, with a perforated iron cover.

Two 30-ampere covered combination knife switches are included in the outfit, also asbestos leads with solderless lugs.

Prices

	Code Word	
Power's Dissolving Stereopticon, complete with half size lenses in any focal length, from 10 in., E. F., to 28 in., E. F., with electrical equipment	*entusi*	$150.00
Without electrical equipment, and with calcium burners	*entuto*	130.00
Iris Diaphragm Dissolvers for half size lenses (sold in pairs only)	*entra*	30.00
Segments for Iris Dissolver, each	*entrol*	.25

Projection Lenses

No matter how good your projecting machine may be, or how much money you spend for film service, if your projection lenses are not the best, much of the effect you are seeking for on the screen will be lost. Poor lenses do not bring out the detail or give the proper illumination of the picture. Realizing what an important factor the selection of proper lenses is in obtaining perfect projection, we have devoted a great deal of time and money in scientific investigations; the net result being a line of lenses which we can offer with pride, at a reasonable price to the moving picture trade.

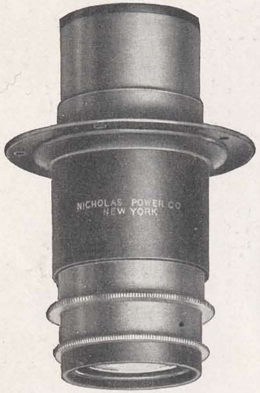


Fig. 34

We heartily recommend the Nicholas Power Company's special lenses for your use, no matter what make of projecting machine is installed in your theatre. They are made of a superior white optical glass, very carefully ground, polished and corrected. They will produce clearly defined pictures, possessing wonderful sharpness, extending to the very edges.

These lenses are made in the standard diameter for moving pictures, which long experience and scientific investigation have shown to be the best suited to bring about the desired results. This diameter utilizes all the available light coming from the arc, and makes possible that superior correction which produces sharpness.

The metal tube in which the moving picture lenses are mounted will fit any standard size jacket, whether equipped with rack and pinion or spiral focusing attachment.

The jacket in which we regularly furnish these lenses complete for moving picture projection, provides for spiral focusing by a very convenient and satisfactory arrangement. When placed on the machine the lens tube should be moved with the fingers backward and forward in the jacket until an approximate focus is obtained. It can thereafter be finally focused by means of a knurled ring on the outer end of the jacket, which turns smoothly and focuses the picture quickly and accurately.

We furnish lenses for lantern slide or stereopticon work on the two diameters best suited to the range of foci which may be required for this purpose. The quarter size lenses are regularly furnished up to and including 18-inch equivalent focus. The half size lenses are regularly furnished for 20-inch and longer equivalent focus.

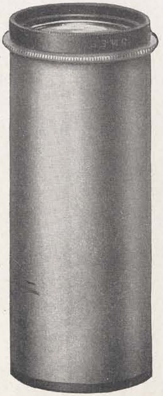


Fig. 35

Special Instructions

In selecting the focal length of your lens there are two elements to be considered. The size of the picture you desire to project, and the distance from the lens to the screen. At a given distance from the screen the shorter the focus of the lens, the larger the picture, and the longer the focus, the smaller the picture. You should bear in mind that the larger the picture is, the less brilliant will be the illumination produced by a given number of amperes of current. Also, that the larger the picture is, or the greater it is magnified, the coarser it will appear on the screen. We recommend brilliant, clear cut pictures of medium size for the most satisfactory results, and you should select a lens of the right focal length to do this at the distance you are to project. A 9 foot by 12 foot picture is about the right size. A 12 foot by 16 foot picture is about the largest you should use, although conditions vary to such an extent that occasionally pictures smaller or larger than stated above may be used advantageously.

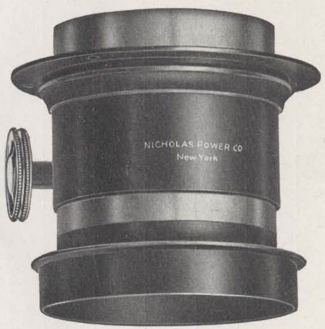


Fig. 33

The projection tables on pages 44 and 45, covering films, will guide you in making your selection. If you are to use lantern or stereopticon slides as well as moving picture films, the size of picture projected by the stereopticon lens should match the height of the moving picture. The height of the moving picture is always approximately three-quarters of the width. These proportions are determined by the opening in the aperture plate and not by the lens.

Always select your lenses before painting or fixing the border around your screen. Don't arbitrarily fix the border and then expect us to furnish lenses which will exactly fill it.

Prices

	Code Word	
Moving Picture Lenses, complete, each........................	*eter*	$12.00
Moving Picture Lens Tubes alone, each........................	*eterod*	8.00
Moving Picture Lens Jackets alone, each......................	*etich*	4.00
Stereopticon Lenses, 8-in. to 18-in. focus, each................	*etimo*	10.00
Stereopticon Lenses, 20-in. to 36-in. focus, each...............	*etnic*	15.00
Stereopticon Lenses matched (sold in pairs only)..............	*etral*	30.00

Table For Film Projection

Distance from Film to Screen

Equiv. Focus in Inches	15 Ft.	20 Ft.	25 Ft.	30 Ft.	35 Ft.	40 Ft.	45 Ft.	50 Ft.	55 Ft.	60 Ft.	65 Ft.	70 Ft.	75 Ft.	80 Ft.
2	5.1 6.9	6.9 9.0	8.5 11.3	10.1 13.7	11.10 15.10	13.6 18.1	15.2 20.4	16.10 22.7	18.8 24.10	20.4 27.2	22.0 29.5	23.9 31.8	25.2 33.11	27.1 36.2
2⅛	4.9 6.4	6.4 8.6	7.11 10.7	9.6 12.9	11.2 14.11	12.9 17.0	14.4 19.2	15.11 21.3	17.6 23.5	19.2 25.6	20.9 27.8	22.4 29.10	23.11 31.11	25.6 34.1
2¼	4.6 6.0	6.0 8.0	7.6 10.0	9.0 12.0	10.6 14.1	12.0 16.1	13.6 18.1	15.0 20.1	16.7 22.1	18.1 24.1	19.7 26.2	21.1 28.2	22.7 30.2	24.1 32.2
2½	4.0 5.5	5.5 7.2	6.9 9.0	8.1 10.10	9.6 12.8	10.10 14.5	12.2 16.3	13.6 18.1	14.11 19.11	16.3 21.8	17.7 23.6	19.0 25.4	20.4 27.2	21.8 28.11
2¾	3.8 4.11	4.11 6.6	6.2 8.2	7.4 9.10	8.7 11.6	9.10 13.2	11.1 14.9	12.4 16.5	13.6 18.1	14.9 19.9	16.0 21.4	17.3 23.0	18.6 24.8	19.8 26.4
3	3.4 4.6	4.6 6.0	5.7 7.6	6.9 9.0	7.11 10.6	9.0 12.0	10.2 13.7	11.3 15.1	12.5 16.7	13.6 18.1	14.8 19.7	15.10 21.1	16.11 22.7	18.1 24.1
3¼	3.1 4.2	4.2 5.6	5.2 6.11	6.3 8.4	7.3 9.9	8.4 11.1	9.4 12.6	10.5 13.11	11.5 15.3	12.6 16.8	13.6 18.1	14.7 19.6	15.7 20.10	16.8 22.3
3½	2.10 3.10	3.10 5.2	4.10 6.5	5.9 7.9	6.9 9.0	7.9 10.4	8.8 11.7	9.8 12.11	10.8 14.2	11.7 15.6	12.7 16.9	13.6 18.1	14.6 19.4	15.6 20.8
3¾	2.8 3.7	3.7 4.9	4.6 6.0	5.5 7.2	6.3 8.5	7.2 9.7	8.1 10.10	9.0 12.0	9.11 13.3	10.10 14.5	11.9 15.8	12.8 16.10	13.6 18.1	14.5 19.3
4	2.6 3.4	3.4 4.6	4.2 5.7	5.1 6.9	5.11 7.11	6.9 9.0	7.7 10.2	8.5 11.3	9.3 12.1	10.2 13.7	11.0 14.8	11.10 15.10	12.8 16.11	13.6 18.1
4¼	2.4 3.2	3.2 4.3	3.11 5.3	4.9 6.4	5.7 7.5	6.4 8.6	7.2 9.7	7.11 10.7	8.9 11.8	9.6 12.9	10.4 13.10	11.2 14.11	11.11 15.11	12.9 17.0
4½	2.3 3.0	3.0 4.0	3.9 5.0	4.6 6.0	5.3 7.0	6.0 8.0	6.9 9.0	7.6 10.0	8.3 11.0	9.0 12.0	9.9 13.0	10.6 14.1	11.3 15.1	12.0 16.1
4¾	2.1 2.10	2.10 3.9	3.6 4.9	4.3 5.8	5.0 6.8	5.8 7.7	6.5 8.6	7.1 9.6	7.10 10.5	8.6 11.5	9.3 12.4	10.0 13.4	10.8 14.3	11.4 15.3
5	2.0 2.8	2.8 3.7	3.4 4.6	4.0 5.5	4.9 6.4	5.5 7.2	6.1 8.1	6.9 9.0	7.5 9.11	8.1 10.10	8.9 11.9	9.6 12.8	10.2 13.7	10.10 14.5
5¼	1.11 2.6	2.6 3.5	3.2 4.3	3.10 5.2	4.6 6.0	5.2 6.10	5.9 7.9	6.5 8.7	7.1 9.5	7.9 10.4	8.4 11.2	9.0 12.0	9.8 12.11	10.4 13.9
5½	1.10 2.5	2.5 3.3	3.0 4.1	3.8 4.11	4.3 5.9	4.11 6.6	5.6 7.4	6.2 8.2	6.9 9.0	7.4 9.10	8.0 10.8	8.7 11.6	9.3 12.4	9.10 13.2
5¾	1.9 2.4	2.4 3.1	2.11 3.11	3.6 4.8	4.1 5.6	4.8 6.3	5.3 7.1	5.10 7.10	6.5 8.7	7.0 9.5	7.8 10.2	8.3 11.0	8.10 11.9	9.5 12.7
6	1.8 2.3	2.3 3.0	2.9 3.9	3.4 4.6	3.11 5.3	4.6 6.0	5.1 6.9	5.7 7.6	6.2 8.3	6.9 9.0	7.4 9.9	7.11 10.6	8.5 11.3	9.0 12.0
6¼	1.7 2.2	2.2 2.10	2.8 3.7	3.3 4.4	3.9 5.0	4.4 5.9	4.10 6.6	5.5 7.2	5.11 7.11	6.6 8.8	7.0 9.5	7.7 10.1	8.1 10.10	8.8 11.7
6½	1.6 2.1	2.1 2.9	2.7 3.5	3.1 4.2	3.7 4.10	4.2 5.6	4.8 6.3	5.2 6.11	5.8 7.7	6.2 8.4	6.9 9.0	7.3 9.9	7.9 10.5	8.4 11.1
6¾		2.0 2.8	2.6 3.4	3.0 4.0	3.6 4.8	4.0 5.4	4.6 6.0	5.0 6.8	5.6 7.4	6.0 8.0	6.6 8.8	7.0 9.4	7.6 10.0	8.0 10.8
7		1.11 2.6	2.5 3.2	2.10 3.10	3.4 4.6	3.10 5.2	4.4 5.9	4.10 6.5	5.3 7.1	5.9 7.9	6.3 8.4	6.9 9.0	7.3 9.8	7.9 10.4
7¼			2.4 3.1	2.9 3.8	3.3 4.4	3.8 4.11	4.2 5.7	4.8 6.2	5.1 6.10	5.7 7.5	6.0 8.1	6.6 8.8	7.0 9.4	7.5 9.11
7½			2.3 3.0	2.8 3.7	3.1 4.2	3.7 4.9	4.0 5.5	4.6 6.0	4.11 6.7	5.5 7.2	5.10 7.10	6.3 8.5	6.9 9.0	7.2 9.7
7¾			2.2 2.11	2.7 3.6	3.0 4.1	3.6 4.8	3.11 5.3	4.4 5.10	4.9 6.5	5.3 7.0	5.8 7.7	6.1 8.2	6.6 8.9	7.0 9.4
8			2.1 2.9	2.6 3.4	2.11 3.11	3.4 4.6	3.9 5.1	4.2 5.7	4.7 6.2	5.1 6.9	5.6 7.4	5.11 7.11	6.4 8.5	6.9 9.0
8½				2.4 3.2	2.9 3.8	3.2 4.3	3.7 4.9	3.11 5.3	4.4 5.10	4.9 6.4	5.2 6.11	5.7 7.5	5.11 7.11	6.4 8.6
9				2.3 3.0	2.7 3.6	3.0 4.0	3.4 4.6	3.9 5.0	4.1 5.6	4.6 6.0	4.10 6.6	5.3 7.0	5.7 7.6	6.0 8.0
9½				2.1 2.10	2.6 3.3	2.10 3.9	3.2 4.3	3.6 4.9	3.11 5.2	4.3 5.8	4.7 6.2	5.0 6.8	5.4 7.1	5.8 7.7
10				2.0 2.8	2.4 3.2	2.8 3.7	3.0 4.0	3.4 4.6	3.8 4.11	4.0 5.5	4.4 5.10	4.9 6.4	5.1 6.9	5.5 7.2

Table For Film Projection

Distance from Film to Screen

Equiv. Focus in Inches	85 Ft.	90 Ft.	95 Ft.	100 Ft.	105 Ft.	110 Ft.	115 Ft.	120 Ft.	125 Ft.	130 Ft.	135 Ft.	140 Ft.	145 Ft.	150 Ft.
2	28.10 38.6	30.6 40.9	32.3 43.0	33.11 45.3	35.7 47.6	37.4 49.9								
2⅛	27.1 36.2	28.9 38.4	30.4 40.6	31.11 42.7	33.6 44.9	35.1 46.10	36.8 49.0							
2¼	25.7 34.2	27.1 36.2	28.7 38.3	30.2 40.3	31.8 42.3	33.2 44.3	34.8 46.3	36.2 48.3	37.8 50.3					
2½	23.0 30.9	24.5 32.7	25.9 34.5	27.1 36.2	28.6 38.0	29.10 39.10	31.2 41.8	32.7 43.5	33.11 45.3	35.3 47.1	36.7 48.11	38.0 50.8		
2¾	20.11 28.0	22.2 29.7	23.5 31.3	24.8 32.11	25.11 34.7	27.1 36.2	28.4 37.10	29.7 39.6	30.10 41.2	32.1 42.9	33.3 44.5	34.6 46.1	35.9 47.9	37.0 49.4
3	19.2 25.8	20.4 27.2	21.6 28.8	22.7 30.2	23.9 31.8	24.10 33.2	26.0 34.8	27.1 36.2	28.3 37.9	29.5 39.3	30.6 40.9	31.8 42.3	32.9 43.9	33.11 45.3
3¼	17.9 23.8	18.9 25.0	19.10 26.5	20.10 27.10	21.11 29.3	22.11 30.7	24.0 32.0	25.1 33.5	26.1 34.10	27.1 36.2	28.2 37.7	29.2 39.0	30.3 40.5	31.3 41.9
3½	16.5 22.0	17.5 23.3	18.5 24.7	19.4 25.10	20.4 27.2	21.4 28.5	22.3 29.9	23.3 31.0	24.3 32.4	25.2 33.7	26.2 34.11	27.1 36.2	28.1 37.6	29.1 38.9
3¾	15.4 20.6	16.3 21.8	17.2 22.11	18.1 24.1	19.0 25.4	19.10 26.6	20.9 27.9	21.8 28.11	22.7 30.2	23.6 31.4	24.5 32.7	25.4 33.9	26.3 35.0	27.1 36.2
4	14.5 19.3	15.3 20.4	16.1 21.6	16.11 22.7	17.9 23.9	18.8 24.10	19.6 26.0	20.4 27.2	21.2 28.3	22.0 29.5	22.10 30.6	23.9 31.8	24.7 32.10	25.4 33.11
4¼	13.6 18.1	14.4 19.2	15.2 20.3	15.11 21.3	16.9 22.4	17.6 23.5	18.4 24.6	19.2 25.6	19.11 26.7	20.9 27.8	21.6 28.9	22.4 29.10	23.1 30.10	23.11 31.11
4½	12.9 17.1	13.6 18.1	14.3 19.1	15.0 20.1	15.10 21.1	16.7 22.1	17.4 23.1	18.1 24.1	18.10 25.1	19.7 26.2	20.4 27.2	21.1 28.2	21.10 29.2	22.7 30.2
4¾	12.1 16.2	12.10 17.1	13.6 18.1	14.3 19.0	15.0 20.0	15.8 20.11	16.5 21.11	17.1 22.10	17.10 23.10	18.6 24.9	19.3 25.8	20.0 26.8	20.8 27.7	21.5 28.7
5	11.6 15.4	12.2 16.3	12.10 17.2	13.6 18.1	14.3 19.0	14.11 19.11	15.7 20.9	16.3 21.8	16.11 22.7	17.7 23.6	18.3 24.5	19.0 25.4	19.8 26.3	20.4 27.2
5¼	10.11 14.7	11.7 15.6	12.3 16.4	12.11 17.3	13.6 18.1	14.2 18.11	14.10 19.10	15.6 20.8	16.1 21.6	16.9 22.5	17.5 23.3	18.1 24.1	18.9 25.0	19.4 25.10
5½	10.5 14.0	11.1 14.9	11.8 15.7	12.4 16.5	12.11 17.3	13.6 18.1	14.2 18.11	14.9 19.9	15.5 20.7	16.0 21.4	16.7 22.2	17.3 22.11	17.10 23.10	18.6 24.8
5¾	10.0 13.4	10.7 14.2	11.2 14.11	11.9 15.9	12.4 16.6	12.11 17.3	13.6 18.1	14.1 18.10	14.9 19.8	15.4 20.5	15.11 21.3	16.6 22.0	17.1 22.10	17.8 23.7
6	9.7 12.9	10.2 13.7	10.9 14.4	11.3 15.1	11.10 15.10	12.5 16.7	13.0 17.4	13.6 18.1	14.1 18.10	14.8 19.7	15.3 20.4	15.10 21.1	16.4 21.10	16.11 22.7
6¼	9.2 12.3	9.9 13.0	10.3 13.9	10.9 14.5	11.4 15.2	11.11 15.11	12.5 16.8	13.0 17.4	13.6 18.1	14.1 18.10	14.7 19.6	15.2 20.3	15.9 21.0	16.3 21.8
6½	8.10 11.10	9.4 12.6	9.11 13.2	10.5 13.11	10.11 14.7	11.5 15.3	12.0 16.0	12.6 16.8	13.0 17.5	13.6 18.1	14.1 18.9	14.7 19.6	15.1 20.2	15.7 20.10
6¾	8.6 11.4	9.0 12.0	9.6 12.9	10.0 13.5	10.6 14.1	11.0 14.9	11.6 15.5	12.0 16.1	12.6 16.9	13.0 17.5	13.6 18.1	14.0 18.9	14.6 19.5	15.0 20.1
7	8.2 11.0	8.8 11.7	9.2 12.3	9.8 12.11	10.2 13.7	10.8 14.2	11.1 14.10	11.7 15.6	12.1 16.2	12.7 16.9	13.1 17.5	13.6 18.1	14.0 18.9	14.6 19.4
7¼	7.11 10.7	8.5 11.2	8.10 11.10	9.4 12.5	9.9 13.1	10.3 13.8	10.9 14.4	11.2 14.11	11.8 15.7	12.2 16.2	12.7 16.10	13.1 17.5	13.6 18.1	14.0 18.8
7½	7.8 10.3	8.1 10.10	8.7 11.5	9.0 12.0	9.6 12.8	9.11 13.3	10.4 13.10	10.10 14.5	11.3 15.1	11.9 15.8	12.2 16.3	12.8 16.10	13.1 17.6	13.6 18.1
7¾	7.5 9.11	7.10 10.6	8.3 11.1	8.9 11.8	9.2 12.3	9.7 12.10	10.0 13.5	10.6 14.0	10.11 14.7	11.4 15.2	11.9 15.9	12.3 16.4	12.8 16.11	13.1 17.6
8	7.2 9.7	7.7 10.2	8.0 10.9	8.5 11.3	8.10 11.10	9.3 12.5	9.9 13.0	10.2 13.7	10.7 14.1	11.0 14.8	11.5 15.3	11.10 15.10	12.3 16.5	12.8 16.11
8½	6.9 9.0	7.2 9.7	7.6 10.1	7.11 10.7	8.4 11.2	8.9 11.8	9.2 12.3	9.6 12.9	9.11 13.3	10.4 13.10	10.9 14.4	11.2 14.11	11.6 15.5	11.11 15.11
9	6.4 8.6	6.9 9.0	7.1 9.6	7.6 10.0	7.11 10.6	8.3 11.0	8.8 11.6	9.0 12.0	9.5 12.6	9.9 13.0	10.2 13.7	10.6 14.1	10.11 14.7	11.3 15.1
9½	6.0 8.1	6.5 8.6	6.9 9.0	7.1 9.6	7.6 10.0	7.10 10.5	8.2 10.11	8.6 11.5	8.11 11.11	9.3 12.4	9.7 12.10	10.0 13.4	10.4 13.9	10.8 14.3
10	5.9 7.8	6.1 8.1	6.5 8.7	6.9 9.0	7.1 9.6	7.5 9.11	7.9 10.4	8.1 10.10	8.5 11.3	8.9 11.9	9.1 12.2	9.6 12.8	9.10 13.1	10.2 13.7

Power's "Improved" Film Rewinder

This rewinder, Fig. 37, consists of a malleable iron casting so constructed as to hold the two reels. It can be readily attached to a table or shelf by means of the clamp and thumbscrew. There is a space of 14 inches between the reel centers.

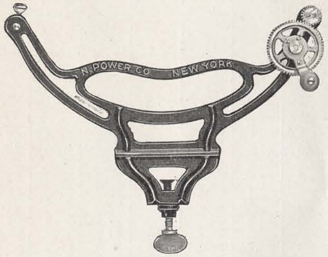


Fig. 37

Price	Code Word	
Power's "Improved" Film Rewinder	*enumer*	$3.50

Power's Perfect Rewinder

This rewinder, Fig. 38, consists of two very substantial castings which can be clamped or screwed to a table or shelf. Its advantage consists not only in its more substantial construction, but also in the fact that the two elements can be placed any desired distance apart, thus permitting ample room for the inspection and splicing of the film, as it is being rewound. The internal gear removes all danger of crushing the fingers or catching and tearing the film in case it slips off the reel. This rewinder is regularly furnished with Power's No. 6 and No. 6A Cameragraph. It is a great favorite with the operators, and it is also used extensively by the film exchanges in their Inspection Departments.

Prices	Code Word	
Power's "Perfect" Rewinder, complete	*epica*	$5.00
Element with rewinding gears and handle	*epulo*	3.50
Dummy with spindle	*epot*	1.50

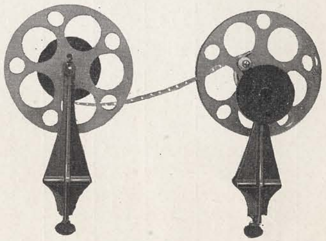


Fig. 38

Power's Film Measuring Machine

Our film measuring machine, Fig. 39, is the most accurate on the market. It is used by the Customs Department of the United States Government and a great many of the photoplay manufacturers and film exchanges. It consists of a base board, at one end of which is clamped a reel hanger with a dummy, or reel supporting frame at the other end. Between the two is the measuring mechanism. It is so constructed as to be absolutely accurate, and by counting the revolutions any length of film can be quickly measured. The dial is made to read in meters instead of feet, when desired. The extreme accuracy of this device will oftentimes save its first cost many times over.

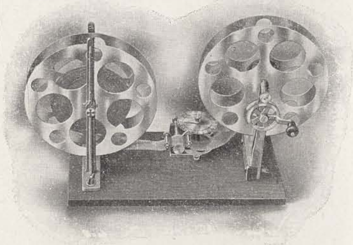


Fig. 39

Prices	Code Word	
Power's Film Measuring Machine, complete	*equabo*	$25.00
Mechanism only	*equa*	20.00

Trunks and Mechanism Carrying Cases

These trunks are specially designed for our Cameragraphs and have separate compartments for the different parts of the machine, as well as providing ample room for carrying films, stage cable, screens and accessories. They are of very substantial construction and many of our customers have traveled thousands of miles without injury to either trunk or contents.

Prices	Code Word
Trunks for No. 6 Cameragraph	*eresil*
Trunks for No. 6A Cameragraph	*eretic*
Trunks for Traveling Outfit	*ermin*

(Prices furnished on application.)

A great many traveling exhibitors object to shipping the mechanism of the Cameragraph in the trunk with the rest of the equipment. We have, therefore, made up a very convenient carrying case for the mechanism. It is made of the best indurated fibre, has a strap handle, and is light and substantial.

	Code Word	
Price of carrying case	*eretot*	$3.50

Slide Carriers

Slide carriers are made for Power's Cameragraphs in two styles, namely, double and single. The double slide carrier is intended for machines having but the one stereopticon lens. The single slide carrier is designed for use with Dissolving View Stereopticon. Both kinds are substantially made and neat in finish.

Prices	Code Word	
Double slide carrier (Russia iron)	*equit*	$1.50
Single slide carrier (Russia iron)	*erbal*	1.50

Lubricating Oil

Too much attention cannot be paid to the proper lubrication of the moving picture machine head, or mechanism. Thin oils, such as are too commonly used are not suitable for Power's No. 6 mechanism. Its heavier construction requires a high-grade oil having some body. For the convenience of the thousands of users of Power's Cameragraphs, we have put up in four-ounce bottles an oil which we have carefully selected and recommend.

	Code Word	
Price, per bottle	*erbot*	$ .30

Graphite

For the lubrication of the gears of moving picture mechanisms, particularly Power's No. 6 and 6A, we recommend powdered graphite thinly mixed with the oil before mentioned. Only a little graphite is necessary, and it should be cleaned off once a week, if the machine is used every day. Kerosene or gasoline can be used for cleaning purposes, and after allowing the mechanism to drip off, it should again be carefully lubricated. We also strongly recommend that all screws and movable parts of the lamp be kept lubricated by dipping same in powdered graphite. The graphite may also be dusted on dry.

	Code Word	
Price, half-pound cans	*eremit*	$ .25

Motors

Having in mind the long hours of service in most theatres, and the variable speed nature of the work required, we have selected motors for both alternating and direct current which are specially suited to meet these requirements. These motors have been approved by the National Board of Fire Underwriters, and the various municipal inspection departments where motor driven machines are permitted. The normal speed of Power's Cameragraph mechanism No. 6A is 60 turns of the crank per minute. The motors are designed for speeds which will attain a maximum of 75 revolutions and a minimum of 50 revolutions of the crank shaft. A higher speed is very injurious to the mechanism and the maximum obtainable with the motor should very seldom be used.

Prices	Code Word	
Direct current, 110 volt motor, with speed regulator	*ermel*	$40.00
Direct current, 220 volt motor, with speed regulator	*ermot*	45.00
Alternating current, 110 volt, 60 cycle motor, with speed regulator	*eros*	40.00
Alternating current, 220 volt, 60 cycle motor, with speed regulator	*erotac*	45.00

Other voltages quoted on application. Alternating current motors for other frequencies can be furnished at special prices.

Motor Attachments

Motor drive is now commonly used and certain machines, including Power's Cameragraph No. 6A, have been approved for use with motor drive by the National Board of Fire Underwriters and the Municipal Inspection Department of various large cities. We have designed a motor attachment for our mechanisms, to which the motors are belted, thus permitting this style of drive without causing undue wear or friction. In no case should a motor be belted to the fly wheel of Power's Cameragraph. The attachment for our No. 6A and No. 6 mechanism, Fig. 40, is so designed that it can be readily fastened to the base of the mechanism, on the side opposite the crank, and meshes into the large idler gear on that side.

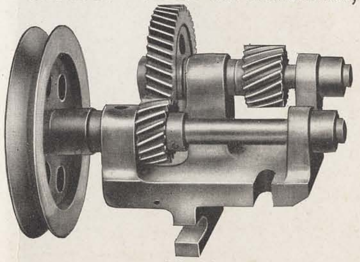


Fig. 40

	Code Word	
No. 6A or No. 6 Motor Attachment	*erical*	$7.50

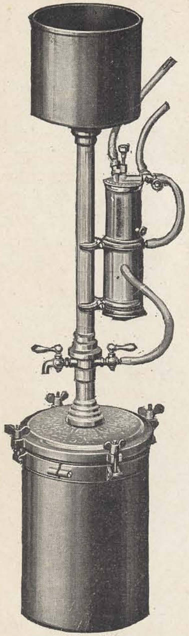


Fig. 41

Model B. Portable Gas-making Outfit

Where electricity is not available calcium light can be used with excellent results. The compressed gases in steel cylinders, furnished by the calcium light companies, should be used when it is possible to do so, as a more brilliant light will thereby be obtained. Where the compressed gases are not available the Portable Gas-making Outfit may be used. The outfit consists of two parts:

1. The Oxygen Generating Apparatus.
2. The Saturator, or Apparatus used to replace the hydrogen tank.

The dimensions of the outfit are: Height, 44 in.; of oxygen compartment, 15 in.; diameter oxygen compartment, 9 inches.

The weight packed in portable case is 35 pounds. There is required for one and a half to two hours, 24 cakes of oxone, one lime and one-half pound ether.

Prices	Code Word	
Model B outfit, complete (without chemical or calcium burner)	*erudir*	$35.00
With standard calcium burner (Fig. 42) and connecting rubber tubing	*erudat*	40.00
Oxone oxygen compound (in sealed can), per can	*erutit*	1.35
Limes, 7/8-inch diameter, per dozen	*erutol*	1.00
Ether, per pound	*eruw*	1.00

Standard Calcium Burners

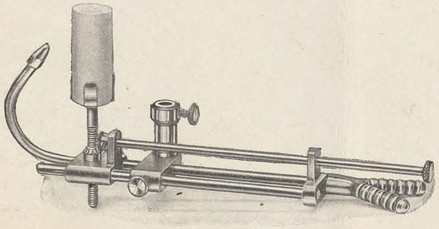


Fig. 42

Our "Standard" calcium burner, Fig. 42, is thoroughly serviceable and has been in general use for many years. It is substantially constructed throughout, of brass and heavily nickel plated. The lime support is carried on a threaded standard turning in extra long bearings, thus assuring perfect steadiness of the lime.

	Code Word	
Price, with six feet of rubber tubing for connections	*esace*	$5.00

Table of Allowances

Surprise, and sometimes indignation, is expressed that we do not allow for parts omitted from a complete machine the same price which is charged when these parts are sold separately. The reason will be found if one takes the time to figure the price of a complete machine at the separate list prices. As an inducement to the exhibitor to buy from us complete equipments, which have been carefully assembled and are guaranteed accurate and as represented, the various items included in such an equipment are figured at less than we can afford to handle them for when sold separately. Our allowances are consistent with fairness and the practice of other reputable manufacturers.

No. 6A Cameragraph	Code Word	
Rheostat	*egrat*	$ 6.00
Stereopticon attachment	*elat*	.85
Switch and cover	*encomo*	2.25
Asbestos covered wire and lugs	*elio*	1.25
Arc lamp	*emcot*	12.50
Condensers, each	*elita*	.50
Reels, each	*elimon*	.50
Slide carrier	*equit*	.75
Upper magazine	*efrit*	10.00
Legs and floor sockets	*edmot*	2.50

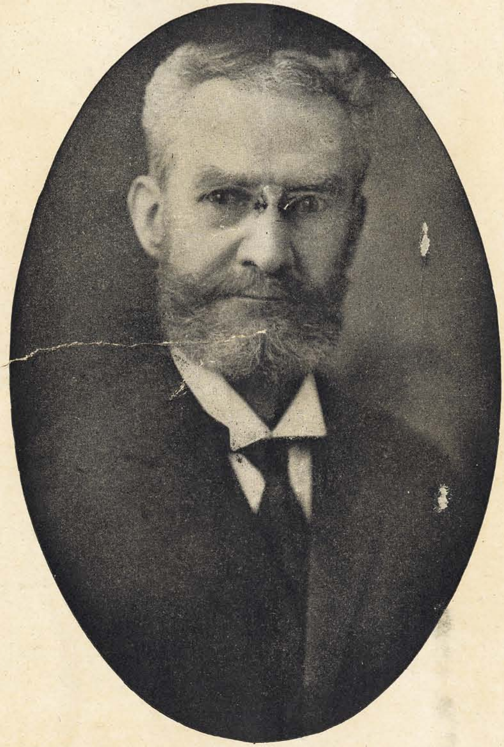
No. 6 Cameragraph		
Rheostat	*egrat*	$ 6.00
Stereopticon attachment	*elat*	.85
Switch and cover	*elasto*	1.00
Asbestos covered wire, with lugs	*elasum*	1.25
Arc lamp	*emul*	7.50
Condensers, each	*elita*	.50
Reels, each	*elimon*	.50
Slide carrier	*equit*	.75
Upper magazine	*efad*	10.00
Lower magazine, with take-up	*efoam*	17.50
Table board	*erot*	1.00
Leg flanges	*ebine*	1.00
Legs	*ecino*	4.25
Floor sockets	*edian*	1.00

Price List of Parts

THIS LIST DOES NOT INCLUDE REPAIR PARTS

	Code Word	
No. 6 Cameragraph mechanism, or head, without lenses, but with Style B automatic fire shutter, without which it is never sold	*ebil*	$132.50
Automatic Fire Shutter, Style B, for No. 6 mechanism	*educat*	12.00
Automatic Fire Shutter, Style B, for No. 6A mechanism	*educir*	13.25
Lamphouse for No. 6A Cameragraph, complete, with sliding ways, slide carrier, condenser holders and condensers	*elud*	30.00
Lamphouse for No. 6 Cameragraph, complete, with sliding ways, slide carrier, condenser holders and condensers	*elog*	26.00
No. 6A Arc Lamp	*emcot*	25.00
"Perfect" Arc Lamp, for No. 6 Cameragraph	*emul*	15.00
No. 6A Stand, with legs and floor sockets	*ecato*	20.00
No. 6 Table, complete, with legs, flanges and floor sockets	*edrine*	14.50
No. 6A Legs, per set	*edlon*	5.00
No. 6 Legs, per set	*egone*	8.50
Leg Flanges for No. 6 Cameragraph, per set	*elina*	2.00
Floor Sockets, per set	*emote*	2.00
No. 6 Table Board	*erot*	2.00
Film Take-up, separate from magazines	*enfoal*	7.50

Powers 6
Moving Picture
Machines



MR. NICHOLAS POWER
The Inventor of Power's Cameragraph